REGULATION 8
ORGANIC COMPOUNDS
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EPISODIC RELEASES FROM PRESSURE RELIEF DEVICES AT PETROLEUM REFINERIES AND CHEMICAL PLANTS

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REGULATION 8
ORGANIC COMPOUNDS
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EPISODIC RELEASES FROM PRESSURE RELIEF DEVICES AT PETROLEUM REFINERIES AND CHEMICAL PLANTS

(Adopted July 16, 1980)

8-28-100 GENERAL

8-28-101 Description: The purpose of this Rule is to prevent the episodic emissions of organic compounds from pressure relief devices on ~~any~~ equipment handling gaseous organic compounds at petroleum refineries, and to collect information on episodic organic and inorganic compound emissions from pressure relief devices at petroleum refineries and chemical plants.

(Amended March 17, 1982, July 20, 1983, December 17, 1997)

8-28-110 Deleted September 6, 1989

8-28-111 Exemption, Evaporation Point: The provisions of this rule shall not apply to pressure relief ~~valves which~~ devices that exclusively handle organic compounds exhibiting a 10% evaporation point greater than 150 degrees Celsius (302 degrees Fahrenheit) when using ASTM D-86 and/or inorganic compounds not listed in Section 8-28-401.5. ~~The provisions of this rule shall also not apply to thermal relief valves that are vented to process drains or back to the pipeline.~~

(Amended September 6, 1989, December 17, 1997, March 18, 1998)

8-28-112 Exemption, Storage Tanks: The requirements of this rule shall not apply to any pressure relief devices on storage tanks. (Amended December 17, 1997)

8-28-113 Exemptions, Research and Development Facilities: The provisions of this Rule shall not apply to research or development facilities ~~which~~ that produce only non-commercial products for research and development purposes.

(Adopted June 1, 1994)

8-28-114 Limited Exemption, Small Refineries: Section 8-28-304.2 shall not apply to petroleum refineries processing less than 20,000 barrels per stream day of crude, unless the District's evaluation of the Process Hazards Analysis in Section 8-28-~~303.1~~406 determines that it is cost-effective and technologically feasible for the refinery to control the pressure relief devices.

(Adopted December 17, 1997)

8-28-115 Exemption, Thermal Relief Valves: The provisions of this rule shall not apply to thermal relief valves that are vented to process drains or back to the pipeline.

8-28-200 DEFINITIONS

8-28-201 Chemical Plant: Any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has ~~28~~ 325 as the first ~~two~~ three digits in the~~ir Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual published in 1972 by the Executive Office of the President, Office of Management and Budget~~ North American Industrial Classification Standard (NAICS) Code. Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man-made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; and re-refining, not including petroleum refineries.

(Adopted July 20, 1983, Amended December 17, 1997)

8-28-202 Pressure Relief Valve: The automatic pressure-relieving device actuated by the static pressure upstream of the valve. (Renumbered July 20, 1983)

8-28-203 Rupture Disk: The thin metal diaphragm held between flanges.

(Renumbered July 20, 1983)

8-28-204 **Deleted December 17, 1997**

8-28-205 **Deleted December 17, 1997**

8-28-206 **Deleted December 17, 1997**

8-28-207 **Modified Source:** The same definition contained in District Regulation 2-~~2-223~~, Rule 1.

(Adopted December 17, 1997)

~~**8-28-208 Parallel Service:** Additional pressure relief devices which protect a common piece or pieces of equipment. These additional pressure relief devices may be installed as spares to facilitate maintenance or because the design relieving capacity cannot be obtained with a single pressure relieving device. The pressure relieving devices do not need to have the same pressure setting to be considered parallel.~~

~~(Adopted December 17, 1997)~~

8-28-209 **Petroleum Refinery:** Any facility that processes ~~products~~petroleum as defined in ~~Standard Industrial Classification Manual as Industry No. 2911, Petroleum Refining~~the North American Industrial Classification Standard No. 32411 (1997).

(Adopted December 17, 1997)

8-28-210 **Pressure Relief Device:** The automatic pressure-relieving device for discharges of ~~organic compounds~~ material ~~which~~ that prevents safety hazards, prevents pressures from exceeding the maximum allowable working pressure of the operating process equipment, or prevents equipment damage. Such devices include, but are not limited to, pressure relief valves, emergency de-pressuring vents ~~or~~ and rupture disks.

(Adopted December 17, 1997)

8-28-211 **Prevention Measure:** A reliable component, system, or program that will prevent ~~a Release Event~~releases from pressure relief devices. Examples of prevention measures include, but are not limited to: (1) flow, temperature, level and pressure indicators with interlocks, deadman switches, monitors, or automatic actuators, (2) documented and verified routine inspection and maintenance programs, (3) inherently safer designs, (4) deluge systems. Operator training and documented and verified routine inspection and maintenance programs may count as only one of the 3 Prevention Measures required by Section 8-28-405 ~~302.2, 8-28-303.2, and 8-28-304.1~~. A component, system or program with a high probability for failure shall not be considered a Prevention Measure.

(Adopted December 17, 1997)

8-28-212 **Process Hazards Analysis (PHA):** A ~~PHA is a~~n organized effort to identify and analyze the significance of hazardous scenarios associated with a process or activity. For the purposes of this rule, PHA's are used to pinpoint weaknesses in the design and operation of facilities that could lead to ~~a Release Event~~ releases from pressure relief devices and to provide the facility with information to aid in making decisions for preventing such ~~events~~ releases.

(Adopted December 17, 1997)

8-28-213 **Qualified Person:** An APCO-approved person who is qualified to attest to the validity of the ~~Prevention Measures Procedures~~ Process Safety Requirements and who is a registered professional engineer in the State of California with expertise in chemical, mechanical or safety engineering.

(Adopted December 17, 1997)

8-28-214 **Release Event:** Any release of organic or inorganic pollutants greater than 10 pounds ~~resulting~~ from a pressure relief~~ving~~ device, subject to this Rule, ~~opening~~ to the atmosphere. These events do not include releases that are vented to a vapor recovery or disposal system with at least 95% by weight organic compound control efficiency.

(Adopted December 17, 1997)

8-28-215 **Responsible Manager:** A person who is an employee of the facility or ~~corporation~~ business entity that owns or operates the facility who possesses sufficient ~~corporate~~ authority ~~and who is responsible for the management of the facility~~ to ensure the implementation of Process Safety Requirements.

(Adopted December 17, 1997)

8-28-216 **Process Unit:** A functionally independent processing plant located at a petroleum refinery that is comprised of various equipment (such as distillation and fractionating columns, process reaction vessels, boilers, heat exchangers, piping, pumps, compressors and valves) that operate interdependently to refine a feed stock and/or produce a certain product or products.

8-28-217 Tell-tale Indicator: A physical non-electronic device installed on a pressure relief device that can visually indicate whether or not that pressure relief device has had a release. Tell-tale indicators include, but are not limited to, socks, rupture disks, and flags.

8-28-300 STANDARDS

8-28-301 Deleted December 17, 1997

8-28-302 Pressure Relief Devices at New or Modified Sources at Petroleum Refineries: Any person installing a new refinery source or modifying an existing refinery source, that is equipped with at least one pressure relief device in organic compound service, shall meet all ~~of the following conditions:~~

~~302.1 Meet the~~ applicable requirements of Regulation 2, Rule 2, including Best Available Control Technology~~, and~~

~~302.2 Meet the Prevention Measures Procedures specified in Section 8-28-405~~.

(Adopted December 17, 1997)

8-28-303 Existing Pressure Relief Devices ~~at Existing Sources~~ at Petroleum Refineries: ~~After the next scheduled turnaround following July 1, 1998, use~~ Use of a pressure relief device in organic compound service on any equipment at a Petroleum Refinery is prohibited, except when the device meets at least one of the following conditions ~~prior to the equipment startup~~:

303.1 ~~Vent all~~ The pressure relief device~~s~~ is vented ~~from the source~~ to a vapor recovery or disposal system with at least a 95 percent by weight organic compounds control efficiency, and the control system ~~shall be~~ is properly sized per manufacturer's recommendations to handle the material from all devices it is intended to serve, or

303.2 ~~Meet~~ The facility has implemented the ~~Prevention Measures Procedures~~ Process Safety Requirements specified in Section 8-28-405~~,~~ for the pressure relief device.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-304 Repeat Release – Pressure Relief Devices at Petroleum Refineries: ~~After the next scheduled turnaround following July 1, 1998, any~~ Any petroleum refinery ~~source~~ process unit equipped with at least one atmospheric ~~that has at least one reportable Release Event from a~~ pressure relief device in organic compound service~~, including those in parallel service, in any consecutive five calendar year period~~ shall meet the following conditions:

304.1 ~~Within 90 days of the first Release Event from a pressure relief device, the facility shall conduct an additional, separate Process Hazard Analysis and meet the Prevention Measures Procedures specified in Section 8-28-405; and conduct a failure analysis of the incident, to prevent recurrence of similar incidents.~~ Within 120 days of ~~the first~~ a Release Event from any pressure relief device on the process unit, the facility shall either (i) equip each pressure relief device of that ~~source~~ process unit with a ~~tamperproof~~ tell-tale indicator that will show whether ~~that~~ a release has occurred since the last inspection; or (ii) equip each pressure relief device of that process unit with a monitoring system that complies with the requirements of Sections 8-28-503.1 through 503.3, and demonstrate to the APCO that each pressure relief device is so equipped in a report that complies with the requirements of Sections 8-28-407.1 through 407.6. ~~The Process Hazard Analysis shall include an evaluation of the cost-effectiveness and technical feasibility of control devices to remedy the incident. This evaluation of control devices shall include, but shall not be limited to, the following: (1) installing additional flare gas compressor recovery capacity and (2) venting the pressure relief device that caused the Release Event to existing vapor recovery or disposal systems, and~~

304.2 If, within five years of a first Release Event, a second Release Event occurs on the same process unit, ~~Within~~ within one year of the second Release Event ~~from a pressure relief device in organic compound service on the same source, including those in parallel service~~, the facility shall vent all the pressure relief devices from the process unit ~~that vent the second Release Event, including those in parallel service,~~ to a vapor recovery or disposal system with at least 95 percent by weight organic compounds control efficiency, and shall ensure that the control system ~~shall be~~ is properly sized per manufacturer's recommendations to handle the material from all devices it is intended to serve.

~~The five calendar year period of this section shall begin at the time that the District receives a Prevention Measure Plan as specified in Section 8-28-304.1~~.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-400 ADMINISTRATIVE REQUIREMENTS

8-28-401 Reporting at Petroleum Refineries and Chemical Plants: ~~A~~ Any indication of a Release Event at a petroleum refinery or chemical plant ~~from a pressure relief device at petroleum refineries and chemical plants~~ shall be reported to the APCO ~~on~~ no later than the next working day following the venting. In addition, the following information shall be submitted in writing to the APCO within 30 days following the Release Event:

401.1 Date, time, and duration of the Release Event in minutes.

401.2 The ~~Identification of the~~ pressure relief device involved, identified by its unique number as required in Section 8-28-404 as well as its name and service commonly referred to by the facility.

401.3 ~~Identification of t~~ The incident number assigned by the APCO for the Release Event ~~when the event is reported within one working day~~.

401.4 Type and size of device.

401.5 Type and amount of material released in pounds, accurate to two significant digits. Reportable materials are: total organic compounds, ammonia, hydrogen sulfide, chlorine, sulfur dioxide, sulfur trioxide, hydrofluoric acid, and difluoroethane.

401.6 ~~Necessary i~~Information and assumptions used to report the duration and amount released during the event.

401.7 Cause of the event.

401.8 A schedule for action to prevent re-occurrence of the event.

401.9 Results of fugitive emission inspection of the device done in accordance with the requirements of section 8-28-402.2.

(Amended February 18, 1981; December 17, 1997; March 18, 1998)

8-28-402 Inspection: Any person subject to this Rule shall comply with the following inspection requirements:

402.1 Any pressure relief device subject to this Rule that is equipped with a telltale indicator shall be inspected at least once per day to determine if a release has been indicated, unless and until the pressure relief device has been equipped with a monitoring system pursuant to Section 8-28-503 and the facility has submitted a monitoring system demonstration report pursuant to Section 8-28-407.

402.2 Any pressure relief device in organic compound service ~~which~~ that has a Release Event and is subject to this Rule shall be inspected within 5 working days after ~~actuation~~ the release to confirm compliance with Regulation 8, Rule 18 and the results reported in accordance with Regulation 8-28-401.9.

(Amended September 6, 1989, June 1, 1994, December 17, 1997)

8-28-403 ~~Records~~: ~~Any person subject to this Rule shall comply with the following recordkeeping requirements:~~

~~403.1 Prevention measure records to demonstrate compliance with the standards in sections 8-28-302, 8-28-303, 8-28-304, and 8-28-405~~.

~~(Adopted September 6, 1989, amended June 1, 1994, December 17, 1997)~~

8-28-404 Identification: ~~Any person subject to this rule shall comply with the following identification requirements:~~

~~404.1 All~~ Any pressure relief ~~valves~~ device subject to this rule shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the pressure relief ~~valve~~ device location. Records and reports for each pressure relief ~~valve~~ device shall refer to this identification code.

(Adopted June 1, 1994; Amended December 17, 1997)

8-28-405 ~~Prevention Measures Procedures~~Process Safety Requirements: All facilities using pressure relief devices in organic compound service ~~which~~ that are subject to the standards in Section 8-28-300 ~~and which~~ that have a potential for a Release Event shall comply with the following process safety requirements:

405.1 Explicitly establish training, equipment, inspection, maintenance and monitoring ~~levels~~ requirements such that the pressure relief device releases are minimized ~~and~~;

405.2 Using a Process Hazards Analysis, ~~predict, plan and~~ implement ~~either:~~

~~2.1~~ ~~A~~at least 3 ~~consecutive~~ redundant Prevention Measures ~~for the Release Event~~ before a ~~pressure relief device will~~ release~~:~~. ~~or~~

~~2.2 At least one Prevention Measure for the Release Event before a pressure relief device will release. For single Prevention Measure pressure relief devices that vent a Release Event, within one year of the Release Event, the facility shall vent these pressure relief devices, including those in parallel service, to a vapor recovery or disposal system with at least 95% by weight organic compound efficiency;~~

Until July 1, 2006, as an alternative method of complying with this Section 8-28-405.2, a facility may operate a pressure relief device with only one or two Prevention Measures in place, but if such a device experiences a Release Event then the facility shall vent all devices on the Process Unit served by the device to a vapor recovery or disposal system with at least 95% by weight organic compound control efficiency. By July 1, 2007, all atmospheric pressure relief devices must be equipped with at least three redundant Prevention Measures.

405.3 The Process Safety Requirements m~~M~~ust be approved and signed by a Qualified Person and a Responsible Manager; and

405.4 The Process Safety Requirements m~~M~~ust be submitted for review to the APCO to determine if the plan meets the requirements of subsections 8-28-405.1 through 405.3. The APCO shall provide a 30-day public comment period and will consider all comments received during this period prior to approval or disapproval of the procedures.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-406 Process Hazard Analysis: Within 90 days of the first Release Event from a pressure relief device subject to this Rule at a petroleum refinery, the facility shall conduct an additional, separate Process Hazard Analysis and conduct a failure analysis of the incident to prevent recurrence of similar incidents. The Process Hazard Analysis shall include an evaluation of the cost-effectiveness and technical feasibility of control devices to remedy the incident. This evaluation of control devices shall include, but shall not be limited to, the following: (1) installing additional flare gas compressor recovery capacity and (2) venting the process unit that caused the Release Event to vapor recovery or disposal systems. The owner or operator of the facility shall submit the Process Hazards Analysis to the APCO.

8-28-407 Monitoring System Demonstration Report: No later than June 1, 2007, each facility shall submit to the APCO a Monitoring System Demonstration Report that demonstrates that each pressure relief device subject to this Rule that has the potential to release to the atmosphere is monitored by a monitoring system that satisfies the requirements of Section 8-28-503. The Monitoring System Demonstration Report shall include the following elements:

407.1 A listing of each pressure relief device covered by the report, including the nominal set pressure for each device and the range of pressures over which each device could reasonably be expected to release;

407.2 A description of the monitoring system for each pressure relief device covered by the Report, including a narrative description and diagrams or charts, that clearly identifies all elements of the system and how they operate to monitor releases as required under Section 8-28-503;

407.3 A listing of all operating parameters that are directly monitored by the system (*e.g.* temperature, pressure, flowrates, *etc.*) with a description of (i) the sensitivity and accuracy of the device(s) monitoring each parameter an the frequency with which each parameter is monitored, and (ii) how the sensitivity and frequency of monitoring is sufficient to allow the Monitoring system to detect releases of 10 pounds;

407.4 A listing of any calculations that are used to derive Release Event emissions information from data on operating parameters, including any assumptions on which such calculations are based and the basis for those assumptions;

407.5 A description of the alarms or other indication that the system provides to alert operators that a Release Event has or may have occurred; and

407.6 A description of how the information obtained by the monitoring system is recorded and maintained;

8-28-408 Process Unit Identification Report: No later than March 1, 2006, each petroleum refinery shall submit to the APCO a report listing all process units equipped with atmospheric PRDs, a listing of all associated pressure relief devices subject to this Rule identified in accordance with Section 8-28-404, and the date of the first turnaround following July 1, 1998, for each of the process units.

8-28-500 MONITORING AND RECORDS

8-28-501 Deleted December 17, 1997

8-28-502 Records: Any person subject to this Rule shall maintain the following records for a period of no less than two years and make them available to the APCO upon request:

502.1 Prevention measure records to demonstrate compliance with the standards in Sections 8-28-303 and 8-28-405;

502.2 Records of all of the pressure relief devices in accordance with Section 8-28-404~~.1~~ including a description of all equipment served by those devices;

502.3 Records of daily inspection of pressure relief devices subject to this Rule that are equipped with telltale indicators, including the time of inspection, and the identity of operator conducting the inspection;

502.4 Records of monitoring of any pressure relief device subject to this Rule as required by Section 8-28-503.

(Adopted September 6, 1989; Amended June 1, 1994, December 17, 1997)

8-28-503 Monitoring: Effective June 1, 2007, any person subject to this Rule shall monitor all atmospheric pressure relief devices using a Monitoring System that satisfies the following requirements:

503.1 The Monitoring System shall be designed, installed, maintained, and operated so that it is capable of detecting any Release Event and notifying operators that the Release Event has occurred;

503.2 The Monitoring System shall be designed, installed, maintained and operated so that it is capable of determining the date and time at which a Release Event occurred, the duration of the Release Event and the type and amount of material released.

503.3 The Monitoring System shall include a mechanism for ensuring that all elements of the system are functioning properly by checking the components of the system at least once per day. Such mechanisms may include equipment inspections, instrument calibrations or other means to ensure that equipment, personnel, and systems are operating properly.

8-28-600 MANUAL OF PROCEDURES

8-28-601 Deleted December 17, 1997

8-28-602 Determination of Control Efficiency: The control efficiency as specified in Sections 8-28-214~~302.1~~, 8-28-303.1, 8-28-304.2, and 8-28-405.2~~.2~~ (with the exception of non-enclosed flares) shall be determined as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7; 2) EPA Method 25 or 25A; 3) Flare control efficiency calculations approved by the APCO and EPA in writing; or 4) other methods to demonstrate control efficiency approved by the APCO and EPA in writing. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted June 1, 1994; Amended December 17, 1997)

8-28-603 Deleted December 17, 1997